

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of the claims in the application.

In the Claims

1. – 27. (Canceled)

28. (Currently Amended) A three dimensional steerable catheter to engage the ostium of a right coronary artery of a patient comprising:

a proximal shaft; and

a distal shaft extending from the proximal shaft, the distal shaft including:

a preformed support section including: a transition segment extending from the proximal shaft; and an abutment segment extending from the transition segment; and

a preformed ostium entry section means for engaging the distal tip into the ostium of the right coronary artery such that the distal tip follows a plane that includes the abutment section and a point of connection between the first segment and the second segment when the proximal shaft is rotated clockwise;

the preformed ostium entry section means extending from the support section and including a first segment, extending from the abutment segment, and a second segment, extending from the first segment, the second segment terminating in a distal tip, ~~such that when the proximal shaft is torqued clockwise to engage the distal tip into the ostium of the right coronary artery, the distal tip follows a plane that includes the abutment section and a point of connection between the first segment and the second segment.~~

29. (Original) The catheter of claim 28 wherein the abutment segment abuts an interior surface of the patient's ascending aorta in a plane formed by a tangent of an axis of the first segment when the distal tip is positioned within the ostium of the right coronary artery.

30. (Original) The catheter of claim 28 wherein the second segment is coaxial to an axis of the right coronary artery when the distal tip is positioned within the ostium of the right coronary artery.

31. (Original) The catheter of claim 28 wherein the transition segment is twisted relative to the proximal shaft.

32. (Original) The catheter of claim 28 wherein the abutment segment is positioned at least about 5 millimeters above the level of the ostium of the right coronary artery when the distal tip is positioned within the ostium of the right coronary artery.

33. (Original) The catheter of claim 28 wherein in at least a natural state of the catheter outside the patient with the support section in a sagittal plane relative to the patient, the first segment lies in or to the patient's right of such sagittal plane of the support section when the first segment extends anteriorly from the preformed support section, and the second segment extends back toward such sagittal plane.

34. (Original) The catheter of claim 33 wherein:

the first segment is connected to the support section such that the first segment is initially disposed at a first angle from the support section and at a second angle from the plane of the support section;

the second segment is connected to the first segment such that the second segment is initially disposed at a third angle from the first segment and at a fourth angle from a plane defined by the first segment and at least a portion of the support section;

the first angle is within the range of about 80° to about 170° ;

the second angle is within the range of about 130° to about 180° ;

the third angle is within the range of about 90° to about 175° ; and

the fourth angle is within the range of about 0° to about 90° .

35. (Original) The catheter of claim 34 wherein the transition segment is disposed at one initial angle with the proximal shaft of between about 135° and about 175° and at one initial angle with the abutment segment of between about 135° and about 175° and wherein the transition segment is disposed at another initial angle with the proximal shaft of between about 140° and about 180° and at another initial angle with the abutment segment of between about 140° and about 180°.

36. (Original) The catheter of claim 35 wherein:
the transition segment has a length between about 20 millimeters and about 80 millimeters;
the abutment segment has a length between about 5 millimeters and about 40 millimeters;
the first segment has a length between about 5 millimeters and about 55 millimeters;
and
the second segment has a length between about 5 millimeters and about 55 millimeters.

37. (Currently Amended) A three dimensional steerable catheter to selectively engage the ostium of a right coronary artery of a patient comprising:
a proximal shaft having a proximal end to receive manipulation by a user outside the patient in whom the catheter is used, wherein the proximal shaft transmits torque applied at the proximal end; and
a distal shaft extending from the proximal shaft opposite the proximal end of the proximal shaft such that the distal shaft is responsive to torque transmitted by the proximal shaft, the distal shaft including:
a preformed support section including: a transition segment extending from the proximal shaft; and an abutment segment extending from the transition segment; and
a preformed ostium entry section means for abutting an interior surface of the patient's ascending aorta, such that the abutment segment is in a plane formed by a tangent of an axis of the first segment when the catheter is positioned within the ostium of the right coronary artery;

the preformed ostium entry section means extending from the support section and including a first segment extending from the abutment segment, ~~such that the abutment segment abuts an interior surface of the patient's ascending aorta in a plane formed by a tangent of an axis of the first segment when the catheter is positioned within the ostium of the right coronary artery.~~

38. (Currently Amended) The catheter of claim 37 wherein the preformed ostium entry section means further comprises a second segment, extending from the first segment, the second segment terminating in a distal tip.

39. (Original) The catheter of claim 38 such that when the proximal shaft is torqued clockwise to engage the distal tip into the ostium of the right coronary artery, the distal tip follows an imaginary plane that includes the abutment section and a point of connection between the first segment and the second segment.

40. (Original) The catheter of claim 39 wherein the second segment is coaxial to an axis of the patient's right coronary artery when the distal tip is positioned within the ostium of the right coronary artery.

41. (Original) The catheter of claim 40 wherein the abutment segment is positioned at least about 5 millimeters above the level of the ostium of the right coronary artery when the distal tip is positioned within the ostium of the right coronary artery.

42. (Original) The catheter of claim 40 wherein the transition segment is twisted relative to the proximal shaft.

43. (Original) The catheter of claim 40 wherein in at least a natural state of the catheter outside the patient with the support section in a sagittal plane relative to the patient, the first segment lies in or to the patient's right of such sagittal plane of the support section when the first segment

extends anteriorly from the preformed support section, and the second segment extends back toward such sagittal plane.

44. (Original) The catheter of claim 43 wherein:

the first segment is connected to the support section such that the first segment is initially disposed at a first angle from the support section and at a second angle from the plane of the support section;

the second segment is connected to the first segment such that the second segment is initially disposed at a third angle from the first segment and at a fourth angle from a plane defined by the first segment and at least a portion of the support section;

the first angle is within the range of about 80° to about 170° ;

the second angle is within the range of about 130° to about 180° ;

the third angle is within the range of about 90° to about 175° ; and

the fourth angle is within the range of about 0° to about 90° .

45. (Original) The catheter of claim 44 wherein the transition segment is disposed at one initial angle with the proximal shaft of between about 135° and about 175° and at one initial angle with the abutment segment of between about 135° and about 175° and wherein the transition segment is disposed at another initial angle with the proximal shaft of between about 140° and about 180° and at another initial angle with the abutment segment of between about 140° and about 180° .

46. (Original) The catheter of claim 45 wherein:

the transition segment has a length between about 20 millimeters and about 80 millimeters;

the abutment segment has a length between about 5 millimeters and about 40 millimeters;

the first segment has a length between about 5 millimeters and about 55 millimeters; and

the second segment has a length between about 5 millimeters and about 55 millimeters.

47. (Currently Amended) A three dimensional steerable catheter to engage the ostium of a right coronary artery of a patient comprising:

a proximal shaft; and

a distal shaft extending from the proximal shaft, the distal shaft including:

a preformed support section including: a transition segment extending from the proximal shaft; and an abutment segment extending from the transition segment; and

a preformed ostium entry section means for positioning a distal tip in the ostium of the right coronary artery, such that a first segment and a second lie anterior to the support section when the distal tip is positioned in the right coronary artery;

the preformed ostium entry section means including the first segment extending from the abutment segment, and the second segment extending from the first segment, the second segment terminating in the distal tip. extending from the support section and including a first segment, extending from the abutment segment, and a second segment, extending from the first segment, the second segment terminating in a distal tip, such that when the distal tip is positioned in the ostium of the right coronary artery the first segment and the second segment lie anterior to the support section.

48. (Original) The catheter of claim 47 such that when the proximal shaft is torqued clockwise to engage the distal tip into the ostium of the right coronary artery, the distal tip follows a plane that includes the abutment section and a point of connection between the first segment and the second segment.

49. (Original) The catheter of claim 47 wherein the abutment segment abuts an interior surface of the patient's ascending aorta in a plane formed by a tangent of an axis of the first segment when the distal tip is positioned within the ostium of the right coronary artery.

50. (Original) The catheter of claim 47 wherein the second segment is coaxial to an axis of the right coronary artery when the distal tip is positioned within the ostium of the right coronary artery.

51. (Original) The catheter of claim 47 wherein the transition segment is twisted relative to the proximal shaft.

52. (Original) The catheter of claim 47 wherein the abutment segment is positioned at least about 5 millimeters above the level of the ostium of the right coronary artery when the distal tip is positioned within the ostium of the right coronary artery.

53. (Original) The catheter of claim 47 wherein in at least an initial position of the catheter outside the patient with the support section in a sagittal plane relative to the patient, the first segment lies in such sagittal plane or to the patient's right of such sagittal plane of the support section when the first segment extends anteriorly from the preformed support section, and the second segment extends back toward such sagittal plane.

54. (Original) The catheter of claim 53 wherein:

- the first segment is connected to the support section such that the first segment is initially disposed at a first angle from the support section and at a second angle from the plane of the support section;
- the second segment is connected to the first segment such that the second segment is initially disposed at a third angle from the first segment and at a fourth angle from a plane defined by the first segment and at least a portion of the support section;
- the first angle is within the range of about 80° to about 170° ;
- the second angle is within the range of about 130° to about 180° ;
- the third angle is within the range of about 90° to about 175° ; and
- the fourth angle is within the range of about 0° to about 90° .

55. (Original) The catheter of claim 54 wherein the transition segment is disposed at one initial angle with the proximal shaft of between about 135° and about 175° and at one initial angle

with the abutment segment of between about 135° and about 175° and wherein the transition segment is disposed at another initial angle with the proximal shaft of between about 140° and about 180° and at another initial angle with the abutment segment of between about 140° and about 180° .

56. (Original) The catheter of claim 55 wherein:
- the transition segment has a length between about 20 millimeters and about 80 millimeters;
 - the abutment segment has a length between about 5 millimeters and about 40 millimeters;
 - the first segment has a length between about 5 millimeters and about 55 millimeters;
 - and
 - the second segment has a length between about 5 millimeters and about 55 millimeters.

57. – 65. (Canceled)